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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands	)	CC Docket No. 92-166

COMMENTS OF AERONAUTICAL RADIO, INC., AND THE AIR TRANSPORT ASSOCIATION OF AMERICA

Aeronautical Radio, Inc., (ARINC) and the Air Transport Association of America (ATA), by their attorneys, hereby submit comments in response to the Commission's Notice of Proposed Rulemaking released February 18, 1994.

ARINC is the communications company of the air transport industry. In providing that industry with terrestrial and satellite communications, it has developed technical expertise in the area of aeronautical communications and navigation systems. It also serves as a forum for the synthesis of industry planning in these areas through its Aeronautical Frequency Committee (AFC) and Airlines Electronic Engineering Committee (AEEC).

ATA is the trade association of U.S. scheduled air carriers. Through its Airspace Systems Implementation Committee, it provides a forum for the review of policy matters relating to, inter alia, the use of satellite for communications, navigation, and surveillance.

The interest of ARINC and ATA in this proceeding is focussed upon protection of critical air navigation and aeronautical communications facilities and services operating in, or adjacent to, the frequency bands that will be used for these new mobile satellite services. In furtherance of this interest, ARINC participated actively in the negotiated rulemaking phase, and representatives of ARINC and ATA have been active in the international and domestic organizations looking towards the establishment of the Global Navigation Satellite Service (GNSS).

Under the aegis of the International Civil Aviation Organization (ICAO), civil aviation has been working towards the establishment of GNSS. GNSS will consist initially of the Global Positioning System (GPS), provided by the United States, and GLONASS, provided by the Russian Federation. These two countries have offered to make their facilities available to international aviation for at least ten years at no charge. GNSS will aid enroute navigation, but the greatest benefit will come from the use of these satellite navigation systems to permit instrument landing of aircraft.

Aircraft operating over the territory of the United States will be using GLONASS as well as GPS. Thus, both systems must be protected during all phases of flight over the United States.

The Commission's proposed rules are deficient in two respects:

- First, the Commission should make clear that the power limitation for the mobile units of -15 dB (W/4 kHz) in the band 1610-1626.5 MHz will

apply only after GLONASS is moved below 1610 MHz; until that time, the limit should be -78.5 dB (W/MHz).

- Second, the Commission correctly proposes -70 dB (W/MHz)/-80 dBW out-of-band limits in the band 1574.397-1576.443 MHz to protect GPS; the Commission should provide the same protection for the channels below 1610 MHz to be used by GLONASS.

Co-channel Protection for GLONASS.

At the 1992 World Administrative Radio Conference, the Nations of the world adopted Radio Regulation 731E, which limits mobiles operating in the mobile satellite service in the band 1610-1626.5 MHz to e.i.r.p. densities no greater than -15 dB (W/4 kHz). This regulation also states that these mobiles must not cause harmful interference to stations in the aeronautical radionavigation service operating in accordance with Radio Regulation 732. GLONASS is such a system, and is entitled to protection.

The Negotiated Rulemaking Committee agreed that -15 dB (W/4 kHz) limit would not provide adequate protection for the use of GLONASS nor resolve the sharing issue. The parties agreed to undertake to persuade the Russian Federation to relocate GLONASS below 1610 MHz, but that has not yet happened. Representatives of Russia have been receptive to making the frequency changes, but no date has been agreed upon. This change in frequencies will require replacement of the first generation satellites and can occur only over a period of time. Until the GLONASS frequencies

are changed, GLONASS must be protected as part of the international GNSS.[1] Failure to do this would be to break faith with other countries who plan to rely upon GLONASS, and limit international acceptance of navigation and landing using GPS.

In order to avoid harmful interference with airborne use of GLONASS during instrument landings the mobile earth station power must be limited to no more than -78 dB (W/MHz).[2] Even when the aircraft is at cruising altitude 12,000 meters away from the mobile earth station, the mobile earth station must operate with powers lower than -30.4 dB (W/MHz).[3] For these reasons, proposed Section 25.213(c) should be amended to make clear that, until the Russian Federation has moved its GLONASS operations below 1610 MHz, mobile earth stations must be limited to -78.5 dB (W/MHz) in the band 1610-1616 MHz.[4]

Out-of-Band Protection.

The Commission should also specify out-of-band emission limitations in the band 1598-1609.26 MHz to protect GLONASS after it is moved to frequencies below 1610 MHz. During the negotiated rulemaking, the Committee concluded that an

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[1] A recent article in Mobile Satellite News underscores the continuing commitment of Russia to GLONASS and the desire of the Europeans to use GLONASS as well as GPS as part of GNSS. See Mobile Satellite News, Vol. 6, No. 9 at 5 (April 27, 1994).

[2] Report of the MSS Above 1 GHz Negotiated Rulemaking Committee (April 6, 1993), at 17, 19.

[3] Id. at 17.

[4] ARINC and ATA fully support the objective of persuading Russia to change the frequencies used by GLONASS.

e.i.r.p. density limit of -70 dB (W/MHz) over the channel used by GPS (i.e., 1575.42 $\pm$1.023 MHz) plus a narrow band (less than 600 Hz) power limit of -80 dBW would protect GPS.[5] The Commission has proposed to adopt these limits in order to protect GPS. These same limits should also apply to the channels below 1610 MHz that will be used by GLONASS.[6] Proposed Section 25.213(b) should be amended to specify these limits for the discrete channels in the band 1598-1609.26 MHz that are to be used by GLONASS.

Further Testing.

The final decision on the appropriate figures necessary to protect GPS and GLONASS should await the results of tests being performed by the Department of Defense looking into immunity standards for protection of these systems. Results of the test program are expected by the middle of summer, which would be timely for the Commission's consideration in adopting standards that will promote mobile satellite communications and mobile satellite navigation services.

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[5] Id. at 45.

[6] See id.

Therefore, with these two modifications and subject to the results of ongoing testing programs, ARINC and ATA support adoption of the proposals by the FCC for mobile satellite services operating in the bands 1610-1626.5 MHz and 2483.5-2500 MHz.

Respectfully submitted,

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